Authentication and Authorisation for Research and Collaboration

LifeWatch AARC Pilot

13th FIM4R Workshop

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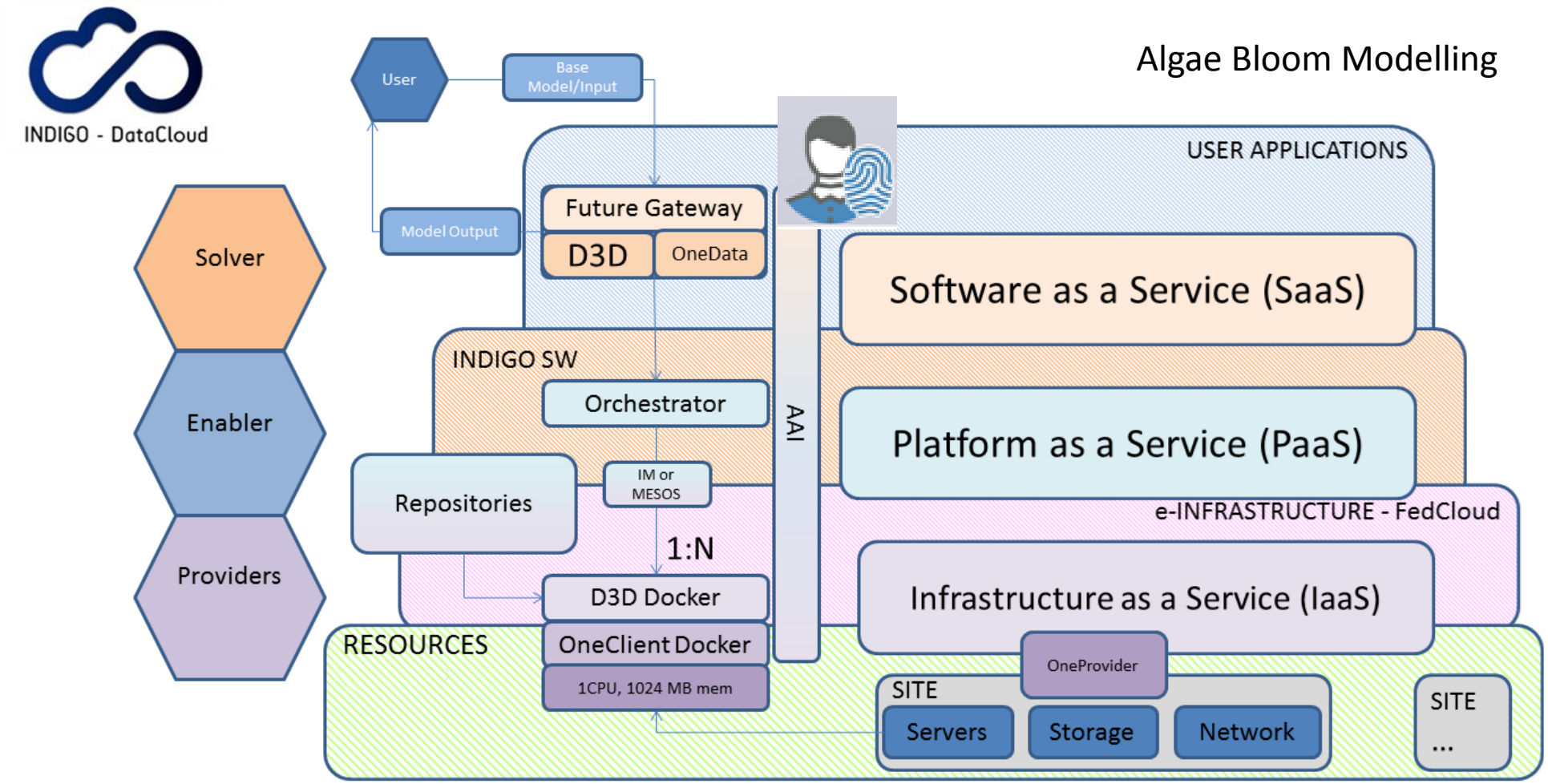
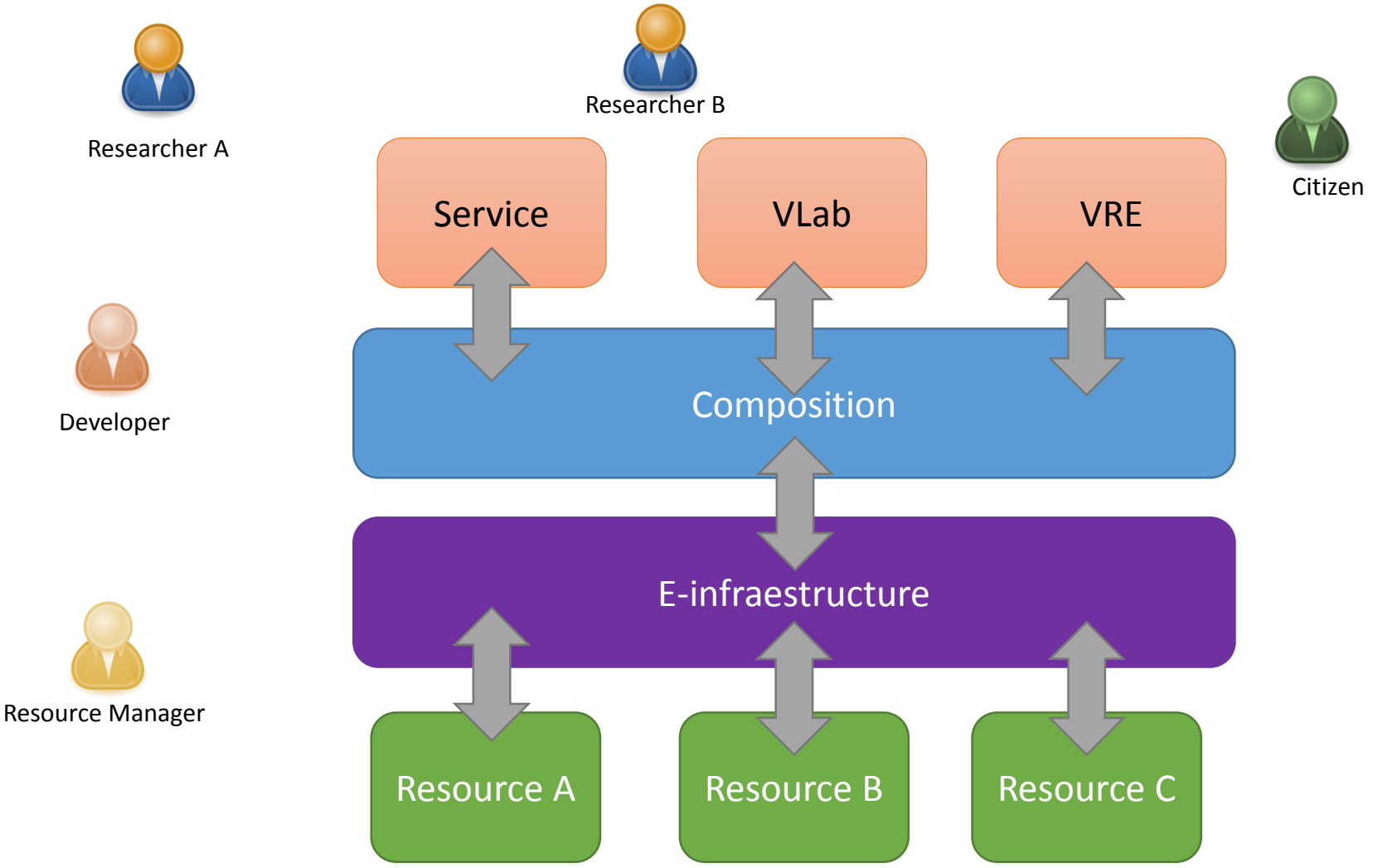
Introduction

- Fernando Aguilar
  - IFCA (CSIC-UC), Computing resources
  - Service development
  - LifeWatch ERIC PPP, EGI-LifeWatch Competence Centre
- LifeWatch-ERIC
  - RI for Biodiversity and Ecosystem research in Europe
  - **LifeWatch-ERIC** seeks to understand the complex interactions between species and the environment, taking advantage of High-Performance, Grid and Big Data computing systems, and the development of advanced modelling tools to implement management measures aimed at preserving life on Earth.
- How?
  - Offering new opportunities for large-scale scientific development
  - Enabling accelerated data capture with innovative new technologies
  - Supporting knowledge-based decision-making for biodiversity and ecosystem management
  - Providing training, dissemination and awareness programmes.

The problem


INDIGO - DataCloud
Algae Bloom Modelling
User
Base Model/Input
Model Output
Future Gateway
D3D
OneData
USER APPLICATIONS
Software as a Service (SaaS)
Solver
Enabler
Providers
INDIGO SW
Orchestrator
AAI
Platform as a Service (PaaS)
Repositories
IM or MESOS
1:N
e-INFRASTRUCTURE - FedCloud
D3D Docker
Infrastructure as a Service (IaaS)
RESOURCES
OneClient Docker
1CPU, 1024 MB mem
OneProvider
SITE
Servers
Storage
Network
SITE
...

The problem



Current Status

- Different Roles
- Different institutions
- Different Services
- Different AAI

Roles/Users

Who/Where are your users typically?

- LifeWatch ICT sites administrators
- LifeWatch Developers (Solvers)
- LifeWatch Researchers
- Citizen Scientists

What kinds of resources do they need to access?

- Infrastructures (IaaS): Site administrators
- PaaS: Solvers
- Applications (SaaS): Solvers Researchers, Citizen Scientists

Where are the resources hosted?

- ICT Core (Distributed). Links to EGI.

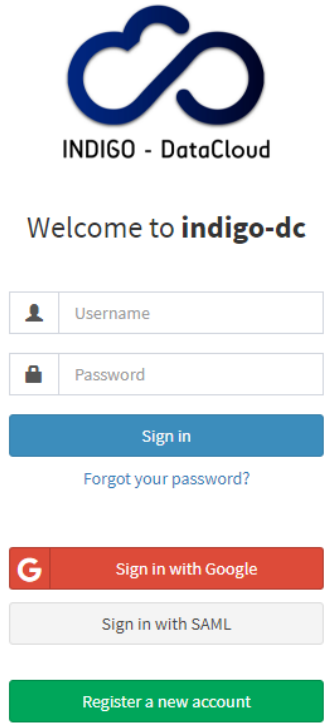
General Information for the Solution

- The central system will run at the LW ICT Core in Spain
- It will provide authentication and authorization services for all LW central and distributed systems, as well as other interested e-infrastructures like EMBRC, DiSSCO.
- It will allow cross-authentication with other identity providers like eduGain, EGI, etc.
- Selected solution must be deployed in the LifeWatch ICT Core.
- The IDP will be used :
- to give access to restricted LW services. The services may be restricted because of processing power or storage demands.
  - to protect user data and scripts that are stored on the infrastructure (unix home folders,etc)
  - to give access to data not yet in the public domain. (data in databases , project moratorium period)
  - to distinguish between users uploading data to the system (RvLab , eLab, data explorer)
  - to give access to Openstack configuration interface and computing resources at infrastructure layer.
  - To manage roles/groups and authorize them to access specific services.
- Currently, the different user apps manage their own users. The institutional credentials could be federated in the Identity Provider.
- Two components suggested by AARC: **Identity Provider**, Token Translator System.

INDIGO IAM – First Choice

- Compatible: OIDC (priority), SAML (interesting, eduGain).
- Federation of 1-N Institutions. Citizen Scientists (Social IDs).
- Roles Management. Role mapping (e.g. Google users to Citizen Scientist).
- Identity linking (optional).
- Group Management. Some groups are allowed to do…
- Distributed, clustered. High availability. Via Database.

- Deployed, but problems with federating N IdPs.



Solution (Keycloak)

- Compatible: OIDC (priority), SAML (interesting, eduGain).
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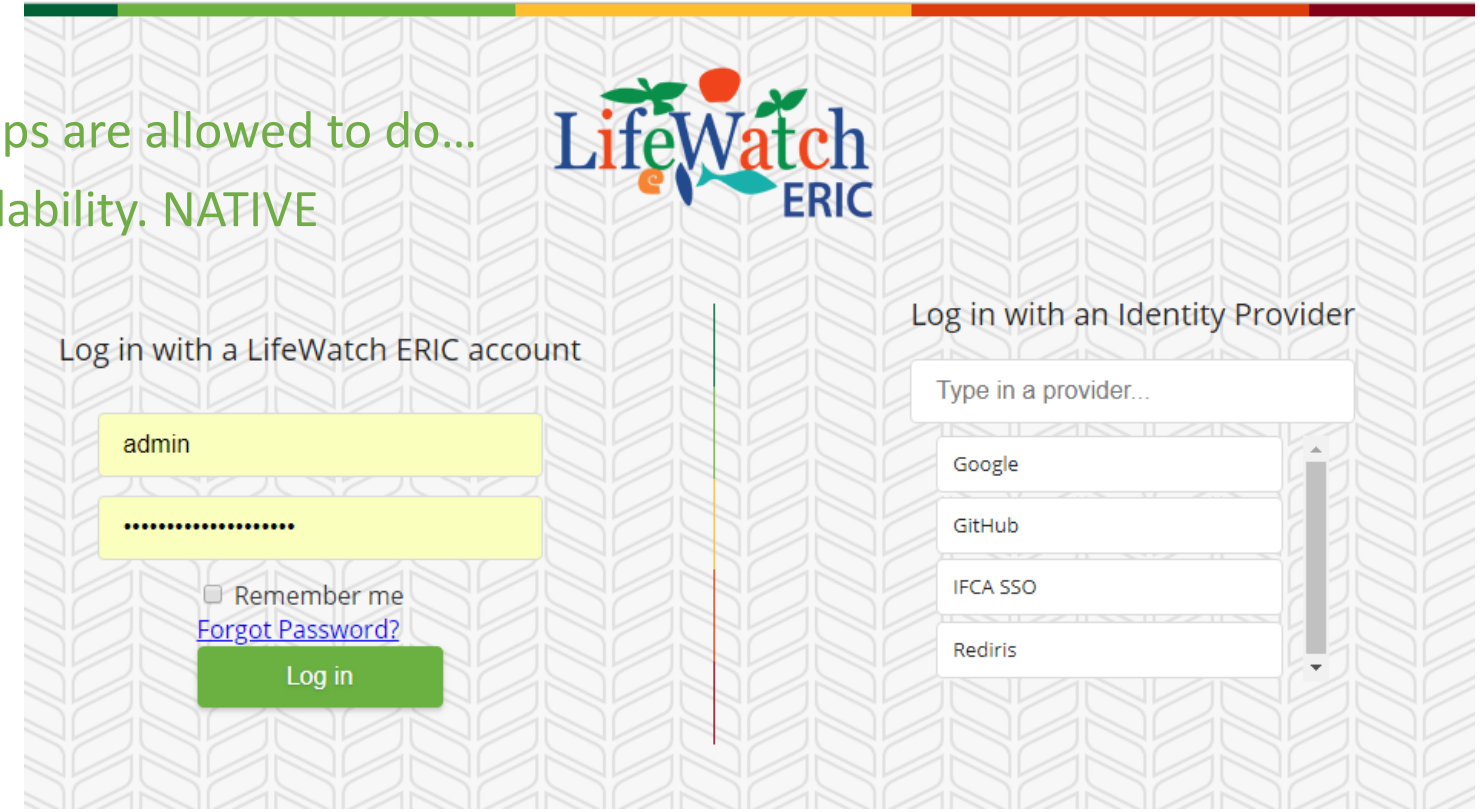
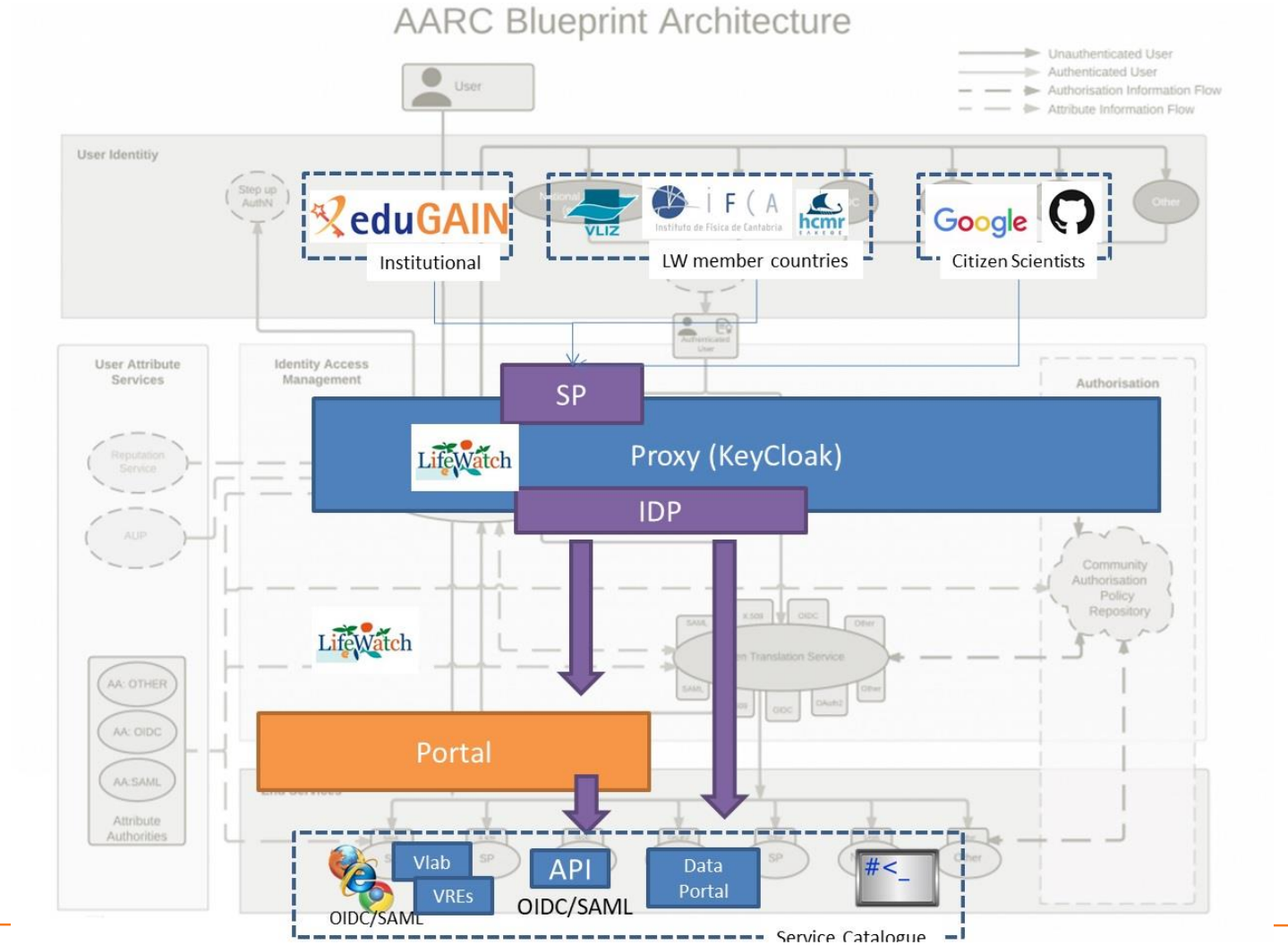
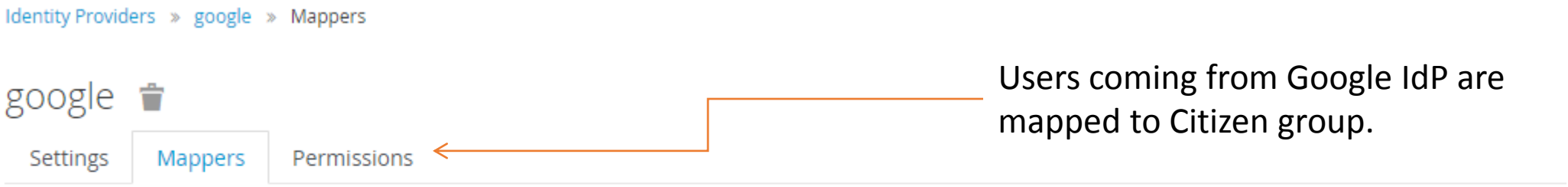


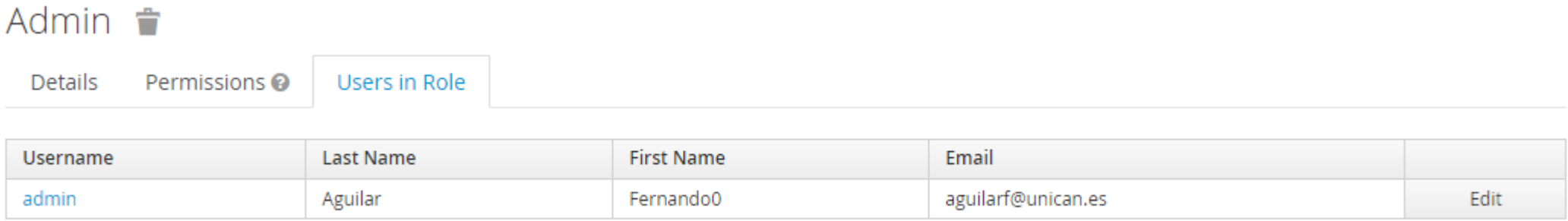
LifeWatch Pilot – AARC BPA



Keycloak – User Roles, Groups

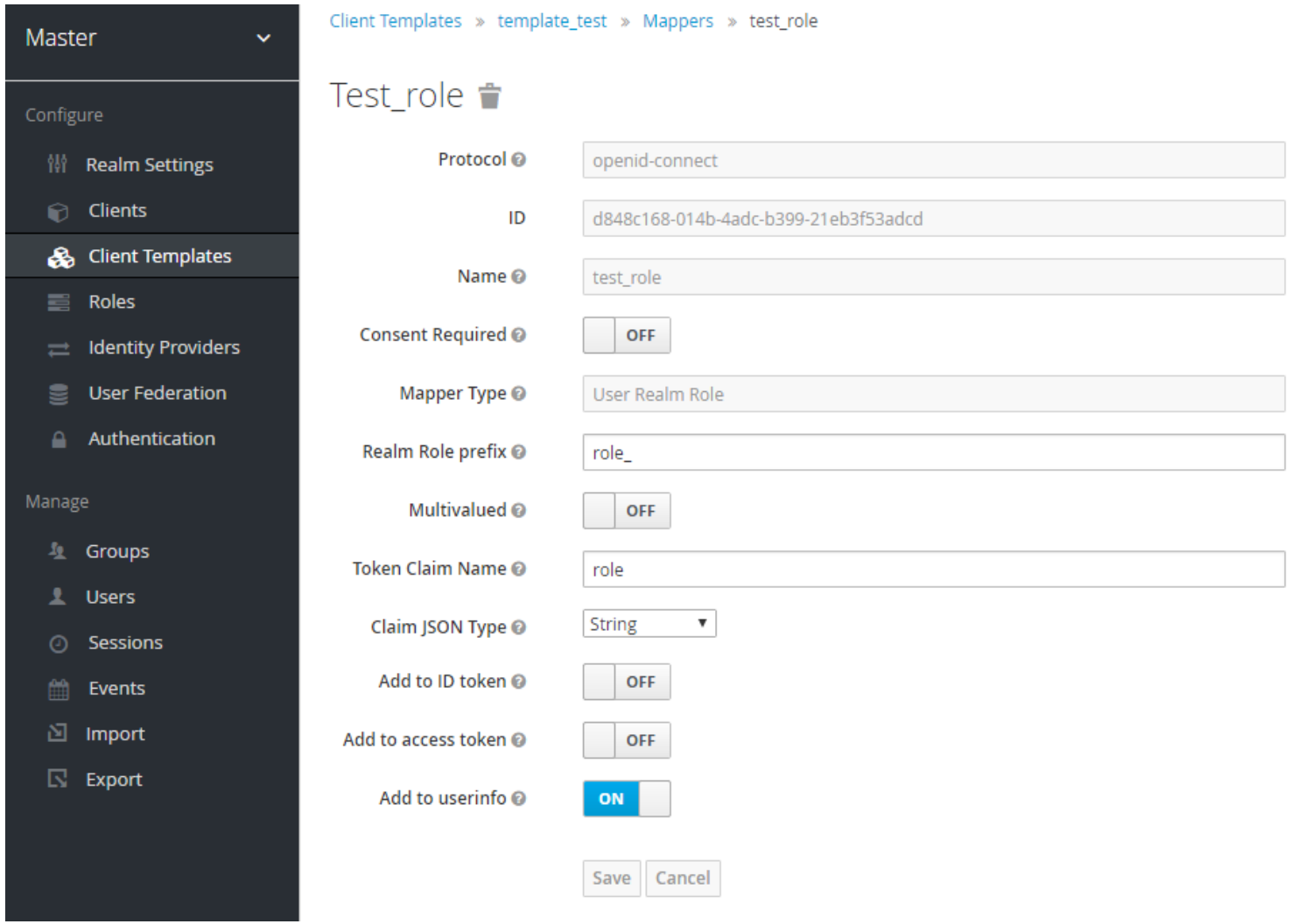


Users coming from Google IdP are mapped to Citizen group.

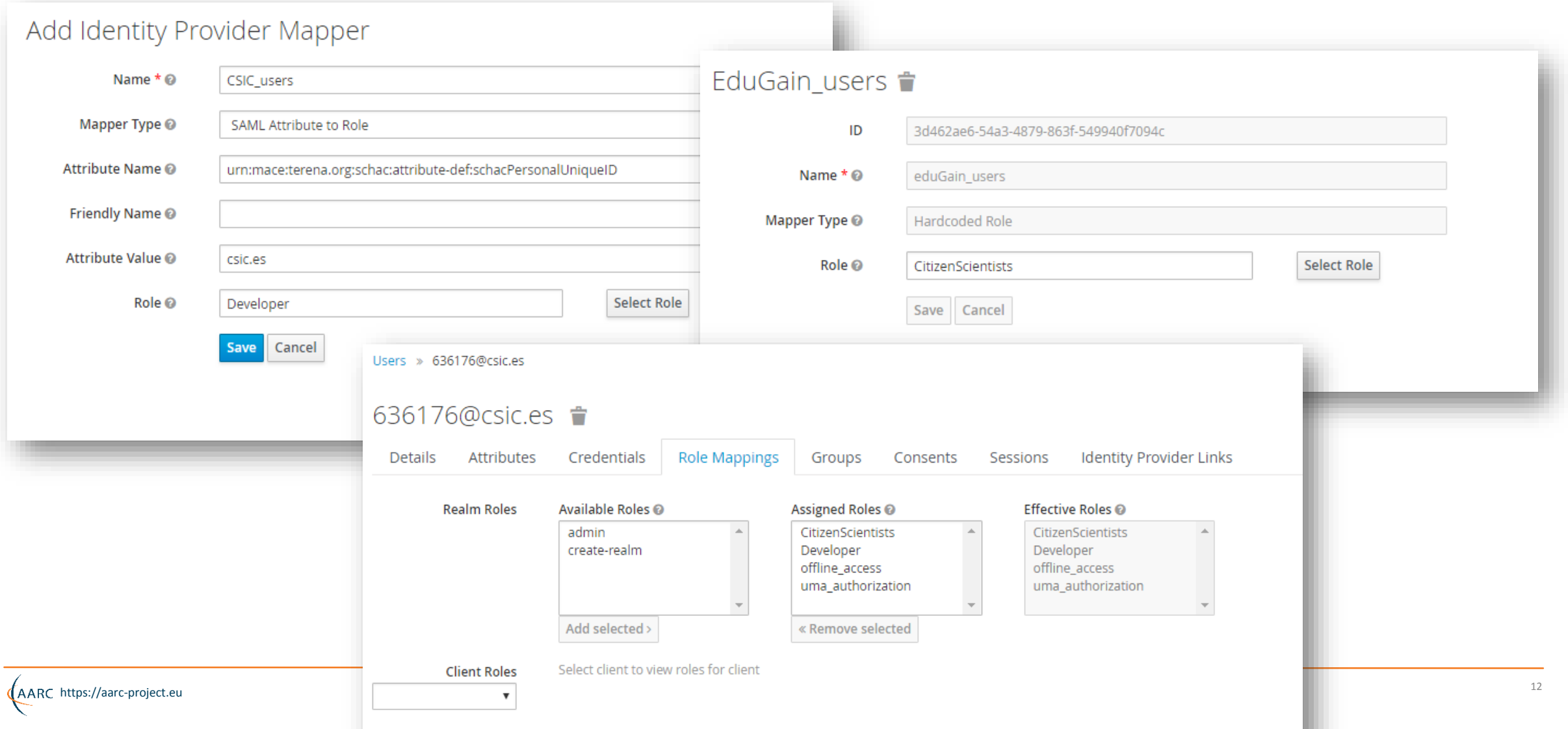


Users are manually added Admin group

Config userinfo



More Role mapping



Simple Python OIDC script to test

{'family_name': 'Aguilar', 'email': 'aguilarf@unican.es', 'sub': 'c6d064d1-b016-49b1-8bde-3ceb12d22abd', 'given_name': 'Fernando0', 'role': '[role_offline_access, role_admin, role_create-realm, role_uma_authorization]', 'preferred_username': 'admin', 'name': 'Fernando0 Aguilar'}

{'family_name': 'Aguilar', 'email': 'fernandoaguilar87@gmail.com', 'sub': 'a05bf658-2b1f-4725-8a06-50edae99d88f', 'given_name': 'Fernando Aguilar', 'role': '[role_offline_access, role_CitizenScientists, role_uma_authorization]', 'preferred_username': 'fernandoaguilar87@gmail.com', 'name': 'Fernando Aguilar'}

Keycloak – App Configuration

- Web based applications:
  - Rshiny (OIDC under Apache), Rstudio (Native plugin in pro version)
  - Data Portals: GBIF, Digital Knowledge Preservation Framework (EOSChub), Automatic Image Analysis (OIDC under Apache), etc.
  - Citizen Science apps: Natusfera, PAIRQURS (with EUDAT services).
  - Geoserver (OIDC plugin), GIS-based services.
- Applications with bridges to HPC.
  - RvLab (Internal User DB) – TTS needed
  - TRUFA (slurm batch system) – Internal User DB - TTS needed
- Mobile Apps
  - Natusfera App
  - Plant classification
- Cloud Computing resources.
  - OpenStack (OIDC compatible. Tested with IFCA SSO)

Current Status

- Keycloak deployed in test environment.
- IdP Federation: IFCA SSO, Google, Github, internal users.
- Test with WikiToLearn solution for federation eduGAIN.
- REDIRIS support to federate eduGAIN.
- Configuration analysis.
- Role mapping.
- Role in userinfo for OIDC.
- Plugin developments: TRUFA, OpenStack keystone (supported by EGI).
- Planning deployment in production: High Availability, distributed.

Lessons learned

- Proposed solutions (EGI check-in, B2ACCESS, INDIGO IAM). All of them OK.
- Keycloak selected due to specific characteristics, “easy” to deploy/mantain, flexible, different operational modes…
- Very customized config
- Recommendations:
  - Analyze your services, users.
  - Try to be open: your needs could change.
  - Standard technologies
  - I recommend Keycloak as solution
- Future plan
  - Deploy on production: Critical service = High Availability
  - Be integrated in LifeWatch portal. Official IdP
  - Integrated in LFW services

Thank you

Any Questions?

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https://aarc-project.eu

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